

CHAPTER 1

Total Energy Use

There are two
common ways to account
for energy use:

resource
energy consumption
and
end-use
energy consumption.

End-use refers to the energy content of electricity and other fuels at the point of use by customers. **Resource energy** includes all energy resources used to generate electricity, including the energy content of the coal, petroleum, nuclear and renewable fuels. Resource energy also includes the energy used to produce the electricity imported into Wisconsin from other states and Canada. Because about 70 percent of the energy used to generate and distribute electricity to its point of use is lost as waste heat, resource consumption figures are greater than end-use consumption figures.

Prior to 1996, petroleum was Wisconsin's leading energy source, but its share of resource energy use has fallen from a peak of 40 percent in 1977 to 27.6 percent in 2008. With new coal-fired electric generation plants coming online at the end of 2008, coal is the leading resource energy source in Wisconsin, comprising 30.8 percent of all resource energy use.

Coal surpassed natural gas as the state's second largest energy source in 1981, and in 1996 coal surpassed petroleum as the state's leading source of resource energy, a lead it held until 2005. In 2008, natural gas resource use increased 2.6 percent.

Renewables increased by 7.9 percent to 4.5 percent of Wisconsin's overall use of resource energy consumption. This includes hydroelectric generation, solar (photovoltaic), biomass (e.g., wood and wood by-products), biogas (e.g., agricultural manure digesters), and wind.

Nuclear power in Wisconsin is no longer owned by utilities, but by independent power producers who sell the power to customers in Wisconsin and other states.

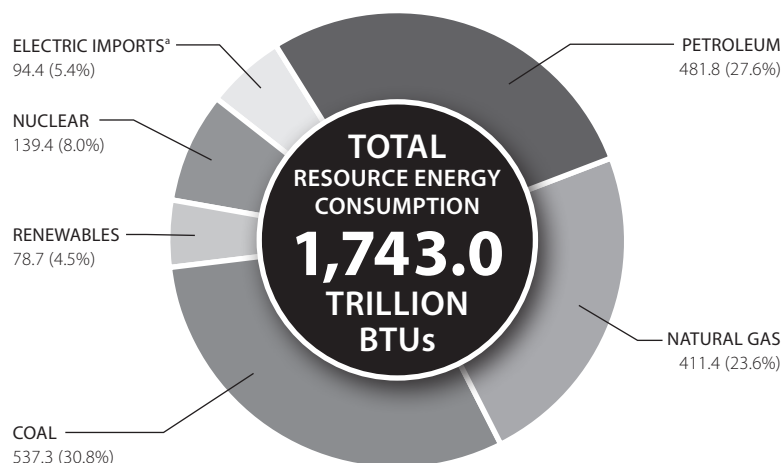
In general, the residential (25.2 percent) and industrial (27.6 percent) sectors each account for about one-quarter of Wisconsin's resource energy consumption. The transportation sector used 24 percent of the state's resource energy while the commercial and agricultural sectors accounted for 21.1 percent and 2.0 percent, respectively. In 2008, residential end-use energy consumption increased 3.5 percent, commercial energy use increased 4.5 percent, industrial energy use decreased 1.2 percent, agricultural energy use decreased 2.2 percent and transportation energy use decreased 2.4 percent.

RESOURCE Energy Consumption	2008	Percent of Wisconsin's Resource Energy Consumption
Resource Energy Consumption	↓ 0.3% overall	
BY FUEL		
Coal Consumption, Utilities	↑ 4.1%	30.8%
Petroleum Consumption	↓ 3.8%	27.6%
Natural Gas Consumption	↑ 2.6%	23.6%
Electricity Imports	↓ 20.4%	5.4%
Renewables	↑ 7.9%	4.5%
BY ECONOMIC SECTOR		
Transportation	↓ 2.4%	24.0%
Residential	↑ 1.3%	25.2%
Industrial	↓ 1.7%	27.6%
Commercial	↑ 2.0%	21.1%
Agricultural	↓ 0.9%	2.0%

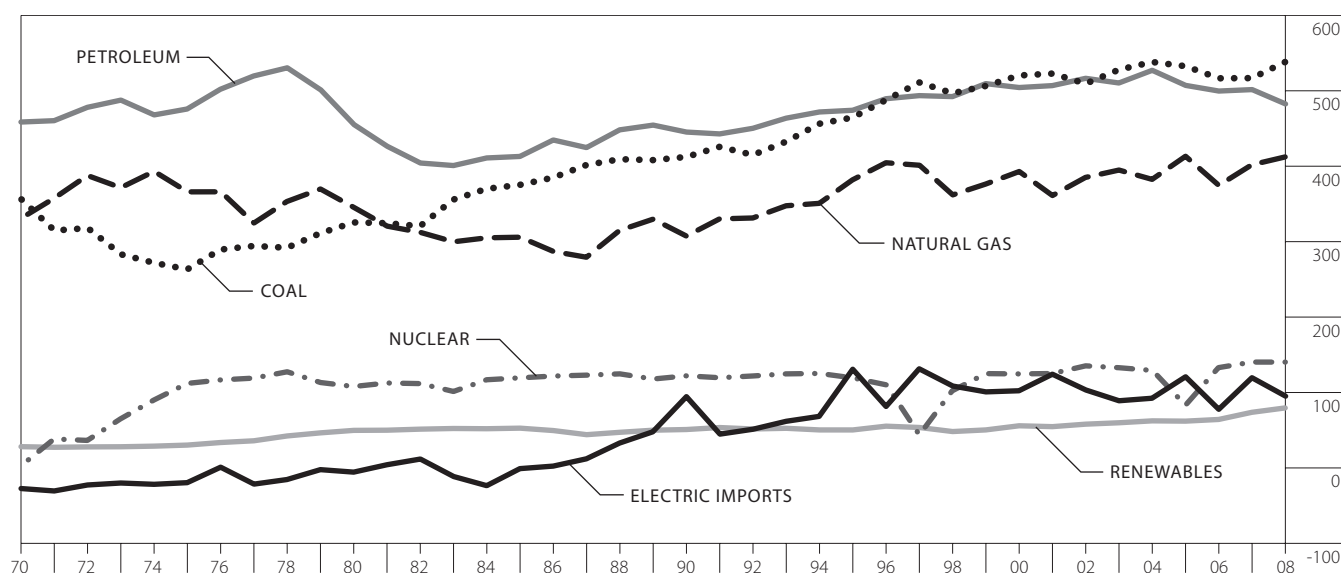
END-USE Energy Consumption	2008	Percent of Wisconsin's End-Use Energy Consumption
End-Use Energy Consumption	↑ 0.28% overall	
BY FUEL		
Petroleum Consumption	↓ 3.7%	39.8%
Natural Gas Consumption	↑ 6.8%	30.6%
Electricity Consumption	↓ 1.8%	19.8%
Renewables Consumption	↑ 8.2%	5.9%
Coal Consumption, Non-Utilities	↓ 5.7%	3.9%
BY ECONOMIC SECTOR		
Transportation	↓ 2.4%	34.6%
Industrial	↓ 1.2%	24.2%
Residential	↑ 3.5%	23.2%
Commercial	↑ 4.5%	16.0%
Agricultural	↓ 2.2%	1.9%

Wisconsin Resource Energy Consumption, by Type of Fuel

2008 TRILLIONS OF BTU AND PERCENT OF TOTAL



1970-2008 TRILLIONS OF BTU



^a "Electric imports" is the estimated resource energy used in other states or Canada to produce the electricity imported into Wisconsin. This resource energy is estimated assuming 11,300 Btu of resource energy per kWh imported into Wisconsin. Values below the "0" indicate that resource energy was used in Wisconsin to produce electricity that was exported out of state.

Source: Wisconsin Office of Energy Independence.

Wisconsin Resource Energy Consumption, by Type of Fuel

1970-2008 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal ^a		Renewables ^b		Nuclear ^d		Electric Imports ^c		Total
1970	457.7	40.0%	329.8	28.8%	355.4	31.1%	27.3	2.4%	1.7	0.1%	-28.2	-2.5%	1,143.7
1975	475.0	38.9%	365.1	29.9%	262.3	21.5%	29.4	2.4%	111.2	9.1%	-20.4	-1.7%	1,222.6
1980	454.4	35.7%	344.5	27.1%	324.6	25.5%	48.9	3.8%	107.0	8.4%	-6.5	-0.5%	1,273.0
1985	412.1	32.7%	305.0	24.2%	374.4	29.7%	51.8	4.1%	118.6	9.4%	-1.8	-0.1%	1,260.1
1990	444.4	31.1%	306.4	21.5%	411.4	28.8%	50.0	3.5%	121.2	8.5%	93.2	6.5%	1,426.7
1995	473.3	29.3%	381.1	23.6%	463.7	28.7%	49.5	3.1%	118.5	7.3%	129.4	8.0%	1,615.4
1996	488.6	30.1%	403.7	24.9%	486.9	30.0%	54.5	3.4%	109.3	6.7%	80.2	4.9%	1,623.1
1997	492.7	30.3%	400.4	24.6%	510.1	31.3%	52.7	3.2%	42.3	2.6%	130.3	8.0%	1,628.6
1998	491.4	30.6%	361.0	22.5%	495.8	30.9%	47.3	2.9%	101.5	6.3%	107.7	6.7%	1,604.7
1999	508.6	30.6%	375.5	22.6%	505.5	30.4%	49.5	3.0%	124.1	7.5%	99.9	6.0%	1,663.2
2000	503.4	29.7%	392.0	23.1%	519.4	30.6%	55.0	3.2%	123.8	7.3%	101.4	6.0%	1,695.1
2001	506.0	30.0%	360.1	21.3%	521.9	30.9%	53.9	3.2%	124.3	7.4%	123.3	7.3%	1,689.4
2002	515.6	30.3%	384.3	22.6%	508.5	29.9%	57.1	3.4%	134.4	7.9%	102.5	6.0%	1,702.5
2003	509.4	29.8%	394.0	23.0%	527.0	30.8%	59.0	3.5%	132.0	7.7%	88.2	5.2%	1,709.6
2004	526.2	30.5%	381.6	22.1%	537.2	31.1%	61.5	3.6%	128.4	7.4%	91.5	5.3%	1,726.5
2005	506.3	29.6%	412.1	24.1%	531.7	31.0%	61.1	3.6%	81.8	4.8%	119.7	7.0%	1,712.8
2006	498.8	30.0%	373.5	22.5%	515.7	31.1%	63.4	3.8%	132.1	8.0%	76.5	4.6%	1,659.9
2007 ^r	500.7	28.6%	401.1	22.9%	515.9	29.5%	72.9	4.2%	139.4	8.0%	118.5	6.8%	1,748.5
2008 ^p	481.8	27.6%	411.4	23.6%	537.3	30.8%	78.7	4.5%	139.4	8.0%	94.4	5.4%	1,743.0

^a Including petroleum coke.

^b Renewables includes solar, wind, wood, biogas, biomass, ethanol and hydroelectric.

^c Electric imports are the estimated resource energy used in other states or Canada to produce the electricity imported into Wisconsin. This resource energy is estimated assuming 11,300 Btu of resource energy per kWh imported into Wisconsin. Negative percentages indicate that resource energy was used in Wisconsin to produce electricity that was exported out of state.

^d Nuclear energy reported here is from power plants formerly owned by Wisconsin utilities and currently owned by independent power producers.

^p Preliminary estimates.

^r Revised.

Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal, renewable resources and electricity use, by economic sector, and for Wisconsin electric utility energy use.

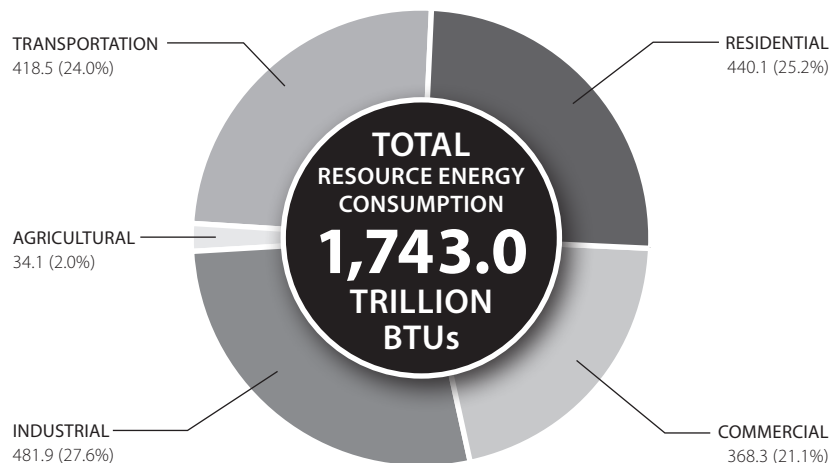
RESOURCE
ENERGY
CONSUMPTION

0.3%

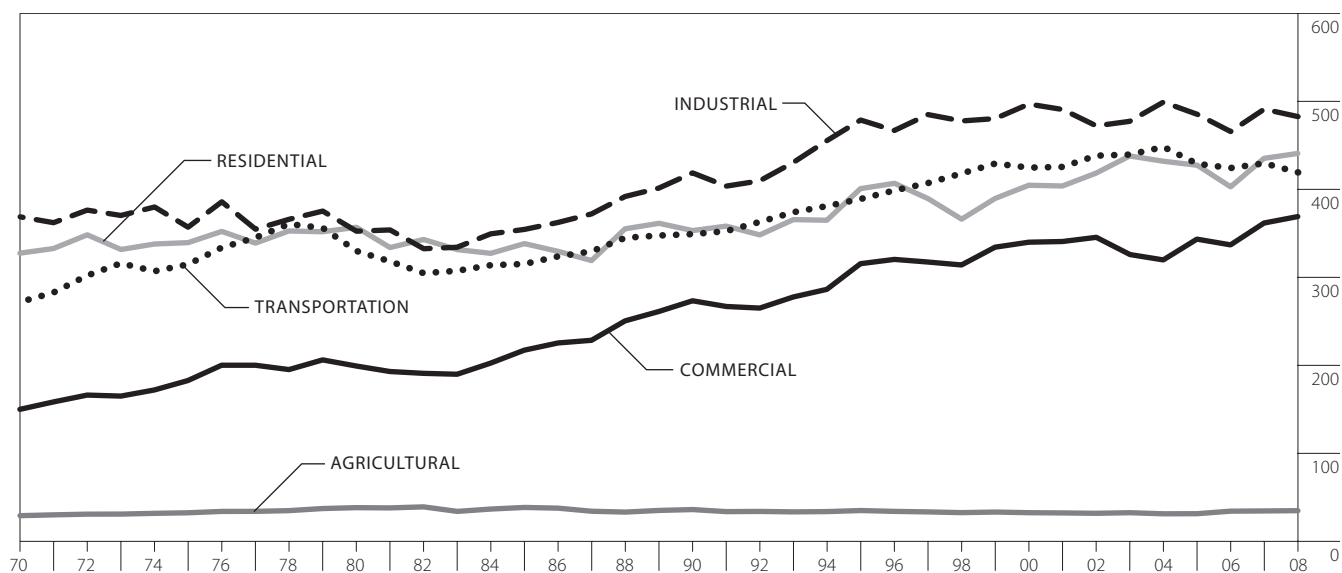
Resource energy
consumption decreased
.3 percent in 2008.
Petroleum use decreased
3.8 percent; natural gas
increased 2.6 percent;
coal increased 4.1
percent; and renewables
increased 7.9 percent.

Wisconsin Resource Energy Consumption, by Economic Sector

2008 TRILLIONS OF BTU AND PERCENT OF TOTAL



1970-2008 TRILLIONS OF BTU



Source: Wisconsin Office of Energy Independence.

Wisconsin Resource Energy Consumption, by Economic Sector

1970-2008 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Residential		Commercial		Industrial		Agricultural		Transportation		Total
1970	326.7	28.6%	149.3	13.1%	368.0	32.2%	28.4	2.5%	271.2	23.7%	1,143.7
1975	338.7	27.7%	182.0	14.9%	356.1	29.1%	31.7	2.6%	314.0	25.7%	1,222.6
1980	356.1	28.0%	198.5	15.6%	351.7	27.6%	37.5	2.9%	329.2	25.9%	1,273.0
1985	337.6	26.8%	216.5	17.2%	353.7	28.1%	37.8	3.0%	314.4	25.0%	1,260.0
1990	352.4	24.7%	272.6	19.1%	417.9	29.3%	35.4	2.5%	348.4	24.4%	1,426.6
1995	400.1	24.8%	314.8	19.5%	477.9	29.6%	34.3	2.1%	388.3	24.0%	1,615.5
1996	406.1	25.0%	319.6	19.7%	466.1	28.7%	33.3	2.1%	398.0	24.5%	1,623.1
1997	388.6	23.9%	316.7	19.4%	484.2	29.7%	32.7	2.0%	406.4	25.0%	1,628.6
1998	365.2	22.8%	313.3	19.5%	477.0	29.7%	31.9	2.0%	417.3	26.0%	1,604.7
1999	388.9	23.4%	333.6	20.1%	479.6	28.8%	32.5	2.0%	428.5	25.8%	1,663.2
2000	403.9	23.8%	339.2	20.0%	496.1	29.3%	31.8	1.9%	423.9	25.0%	1,695.0
2001	403.1	23.9%	340.0	20.1%	490.0	29.0%	31.5	1.9%	424.8	25.1%	1,689.3
2002	417.6	24.5%	344.7	20.2%	471.4	27.7%	31.1	1.8%	437.5	25.7%	1,702.4
2003	437.2	25.6%	325.2	19.0%	476.5	27.9%	31.8	1.9%	438.7	25.7%	1,709.4
2004	431.2	25.0%	319.0	18.5%	498.3	28.9%	30.6	1.8%	447.4	25.9%	1,726.5
2005	426.6	24.9%	342.6	20.0%	484.6	28.3%	30.7	1.8%	428.3	25.0%	1,712.8
2006	401.9	24.2%	336.1	20.2%	464.8	28.0%	33.5	2.0%	423.5	25.5%	1,659.9
2007 ^r	434.5	24.9%	361.0	20.6%	490.3	28.0%	33.8	1.9%	428.8	24.5%	1,748.5
2008 ^p	440.1	25.2%	368.3	21.1%	481.9	27.6%	34.1	2.0%	418.5	24.0%	1,743.0

RESOURCE
ENERGY
CONSUMPTION
0.3%

Total resource energy
consumption decreased
.3 percent in 2008.
The largest increase
(2 percent) was in the
commercial sector.

^p Preliminary estimates.

^r Revised due to revisions in contributing tables.

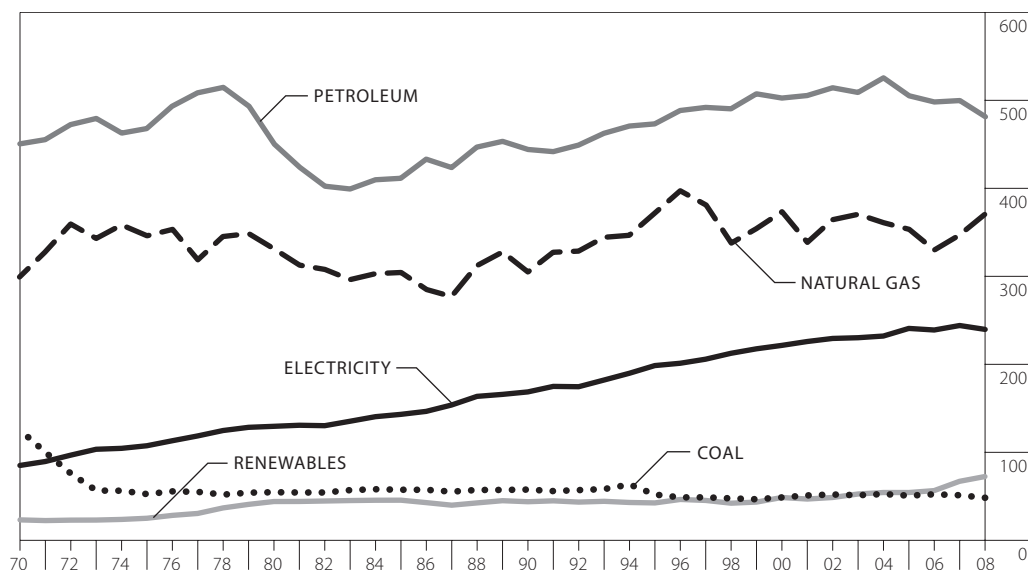
Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal, renewable energy and electricity use, by economic sector, and for Wisconsin electric utility energy use.

Wisconsin End-Use Energy Consumption, by Type of Fuel

**END-USE
ENERGY
0.28%
IN 2008**

End-use energy is a measure of the energy content of fuels at the point of consumption. Since much of the energy needed to generate electricity is lost in the generation process, end-use energy consumption figures will always be lower than the directly linked resource energy consumption figures. End-use energy increased by 0.28 percent overall in 2008, after increasing by 2.9 percent in 2007. Petroleum continues to be the most-used end-use energy source in Wisconsin.

1970-2008 TRILLIONS OF BTU



1970-2008 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal		Renewables		Electricity		Total
1970	449.8	45.9%	298.7	30.5%	124.3	12.7%	22.5	2.3%	84.4	8.6%	979.6
1975	467.2	46.9%	345.3	34.7%	51.8	5.2%	24.3	2.4%	106.7	10.7%	995.4
1980	449.6	44.7%	330.4	32.8%	53.9	5.4%	43.3	4.3%	128.8	12.8%	1,006.1
1985	410.7	42.9%	303.6	31.7%	56.7	5.9%	44.9	4.7%	142.4	14.9%	958.3
1990	443.4	43.7%	304.0	29.9%	56.9	5.6%	43.1	4.2%	167.9	16.5%	1,015.3
1995	472.5	41.7%	371.0	32.7%	51.3	4.5%	41.8	3.7%	197.8	17.4%	1,134.4
2000	501.8	42.1%	372.4	31.3%	48.0	4.0%	47.9	4.0%	220.8	18.5%	1,191.0
2001	504.7	43.4%	337.5	29.0%	50.3	4.3%	46.2	4.0%	225.2	19.3%	1,163.9
2002	513.5	42.6%	363.6	30.2%	51.3	4.3%	47.9	4.0%	228.7	19.0%	1,205.1
2003	508.2	42.0%	369.7	30.6%	50.5	4.2%	51.9	4.3%	229.5	19.0%	1,209.7
2004	524.7	42.9%	360.2	29.5%	51.9	4.2%	53.6	4.4%	231.4	18.9%	1,221.7
2005	504.5	42.0%	352.7	29.4%	50.0	4.2%	53.6	4.5%	240.1	20.0%	1,200.8
2006	497.4	42.4%	329.0	28.1%	51.6	4.4%	55.8	4.8%	238.3	20.3%	1,172.0
2007 ^r	499.0	41.4%	346.1	28.7%	50.5	4.2%	66.3	5.5%	243.4	20.2%	1,205.3
2008 ^p	480.7	39.8%	369.7	30.6%	47.6	3.9%	71.7	5.9%	238.9	19.8%	1,208.7

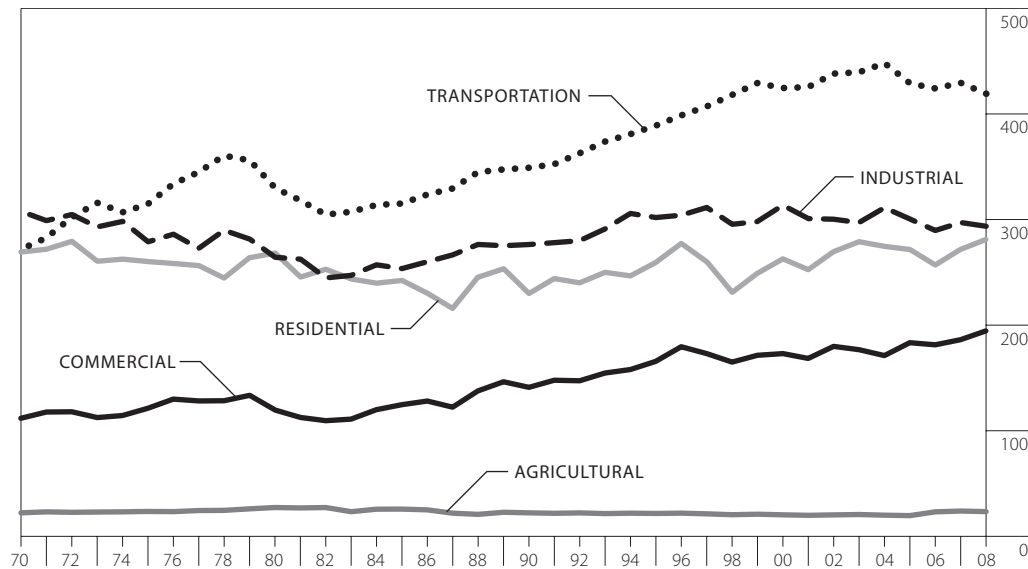
^p Preliminary estimates.

^r Revised due to revisions in contributing tables.

Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal, renewable and electricity use, by economic sector, and for Wisconsin electric utility energy use.

Wisconsin End-Use Energy Consumption, by Economic Sector

1970-2008 TRILLIONS OF BTU



**END-USE
ENERGY
0.28%
IN 2008**

End-use energy consumption increased 0.28 percent in 2008. The transportation sector continues to be the largest user of energy in Wisconsin.

1970-2008 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Residential		Commercial		Industrial		Agricultural		Transportation		Total
1970	268.6	27.4%	111.2	11.3%	307.0	31.3%	21.6	2.2%	271.2	27.7%	979.6
1975	259.6	26.1%	120.6	12.1%	278.2	28.0%	22.9	2.3%	314.0	31.5%	995.4
1980	267.6	26.6%	119.0	11.8%	263.6	26.2%	26.7	2.6%	329.2	32.7%	1,006.1
1985	241.7	25.2%	124.1	12.9%	252.9	26.4%	25.2	2.6%	314.5	32.8%	958.3
1990	229.2	22.6%	140.4	13.8%	275.7	27.2%	21.6	2.1%	348.4	34.3%	1,015.3
1995	258.7	22.8%	165.1	14.6%	301.3	26.6%	21.0	1.9%	388.3	34.2%	1,134.4
2000	262.1	22.0%	172.4	14.5%	312.8	26.3%	19.7	1.7%	423.9	35.6%	1,191.0
2001	251.8	21.6%	167.8	14.4%	300.2	25.8%	19.3	1.7%	424.8	36.5%	1,163.9
2002	268.9	22.3%	179.2	14.9%	299.7	24.9%	19.7	1.6%	437.5	36.3%	1,205.1
2003	278.3	23.0%	176.1	14.6%	296.4	24.5%	20.0	1.7%	438.8	36.3%	1,209.7
2004	274.0	22.4%	170.5	14.0%	310.5	25.4%	19.4	1.6%	447.4	36.6%	1,221.7
2005	271.0	22.6%	182.7	15.2%	299.8	25.0%	19.0	1.6%	428.3	35.7%	1,200.8
2006	256.2	21.9%	180.7	15.4%	288.9	24.7%	22.6	1.9%	423.5	36.1%	1,172.0
2007 ^r	271.1	22.5%	185.6	15.4%	296.5	24.6%	23.3	1.9%	428.8	35.6%	1,205.3
2008 ^p	280.5	23.2%	193.9	16.0%	293.0	24.2%	22.8	1.9%	418.5	34.6%	1,208.7

^r Revised.

^p Preliminary estimates.

Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal, renewable energy and electricity use, by economic sector, and for Wisconsin electric utility energy use.

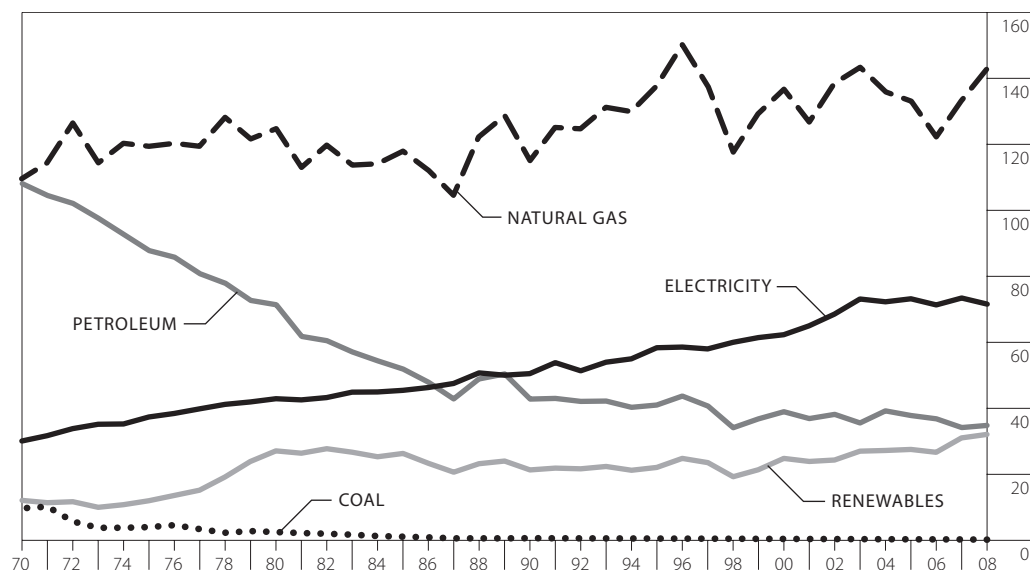
Wisconsin Residential Energy Use, by Type of Fuel

**RESIDENTIAL
END-USE
ENERGY
3.5%
IN 2008**

Residential end-use energy increased 3.5 percent in 2008. Natural gas continues to be the dominant fuel used in Wisconsin homes, providing a little over half of the end-use energy used.

Electricity consumption decreased 2.5 percent from 2007, while petroleum and natural gas use increased by 1.9 and 7.2 percent respectively. Between 1970 and 2008, petroleum use in the residential sector declined 67.9 percent.

1970-2008 TRILLIONS OF BTU



1970-2008 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal		Renewables ^a		Electricity		Total End Use	Total Resource ^b
1970	107.9	40.2%	109.4	40.7%	9.5	3.5%	11.9	4.4%	29.9	11.1%	268.6	326.7
1975	87.6	33.7%	119.2	45.9%	3.8	1.5%	11.8	4.5%	37.2	14.3%	259.6	338.7
1980	71.2	26.6%	124.5	46.5%	2.3	0.9%	26.9	10.1%	42.7	16.0%	267.6	356.1
1985	51.7	21.4%	117.7	48.7%	0.9	0.4%	26.1	10.8%	45.2	18.7%	241.7	337.6
1990	42.6	18.6%	114.7	50.0%	0.4	0.2%	21.1	9.2%	50.3	22.0%	229.2	352.4
1995	40.8	15.8%	137.5	53.2%	0.3	0.1%	21.9	8.5%	58.2	22.5%	258.7	400.1
2000	38.8	14.8%	136.4	52.0%	0.2	0.1%	24.6	9.4%	62.1	23.7%	262.1	403.9
2001	36.7	14.6%	126.4	50.2%	0.2	0.1%	23.7	9.4%	64.8	25.7%	251.8	403.1
2002	38.0	14.1%	138.3	51.4%	0.2	0.1%	24.1	9.0%	68.4	25.4%	268.9	417.6
2003	35.4	12.7%	143.1	51.4%	0.2	0.1%	26.8	9.6%	72.9	26.2%	278.3	437.2
2004	39.0	14.2%	135.7	49.5%	0.1	0.0%	27.0	9.9%	72.1	26.3%	274.0	431.2
2005	37.6	13.9%	132.9	49.0%	0.1	0.0%	27.3	10.1%	73.0	26.9%	271.0	426.6
2006	36.6	14.3%	121.9	47.6%	0.1	0.0%	26.5	10.3%	71.1	27.8%	256.2	401.9
2007 ^r	34.0	12.5%	133.0	49.1%	0.1	0.0%	30.8	11.4%	73.2	27.0%	271.1	434.5
2008 ^p	34.6	12.3%	142.6	50.8%	0.0	0.0%	31.9	11.4%	71.4	25.4%	280.5	440.1

^a Renewables includes wood, solar, wind and biogas.

^b Includes energy resources (and losses) attributable to electricity generation.

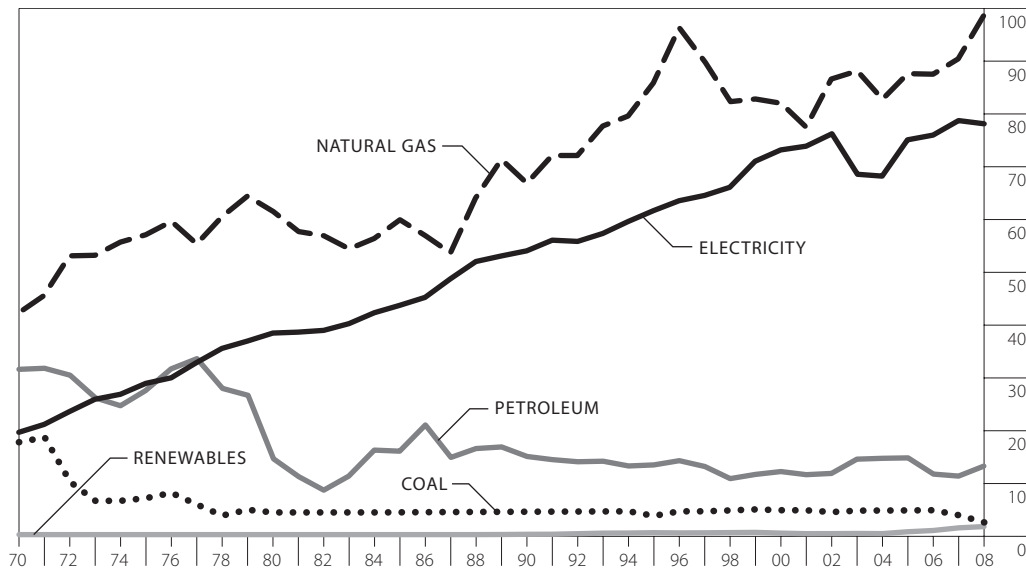
^p Preliminary estimates.

^r Revised due to revisions in contributing tables.

Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal, renewables and electricity use, by economic sector, and for Wisconsin electric utility energy use.

Wisconsin Commercial Energy Use, by Type of Fuel

1970-2008 TRILLIONS OF BTU



1970-2008 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal		Renewables ^a		Electricity		Total End Use	Total Resource ^b
1970	31.5	28.3%	42.2	38.0%	17.7	15.9%	0.2	0.2%	19.6	17.6%	111.2	149.3
1975	27.5	22.8%	57.0	47.2%	7.1	5.9%	0.2	0.2%	28.8	23.9%	120.6	182.0
1980	14.6	12.3%	61.4	51.6%	4.4	3.7%	0.2	0.2%	38.4	32.3%	119.0	198.5
1985	16.0	12.9%	59.8	48.2%	4.4	3.6%	0.2	0.2%	43.6	35.2%	124.1	216.5
1990	15.0	10.7%	66.7	47.5%	4.5	3.2%	0.3	0.2%	54.0	38.4%	140.4	272.6
1995	13.4	8.1%	85.8	52.0%	3.8	2.3%	0.6	0.3%	61.6	37.3%	165.1	314.8
2000	12.1	7.0%	81.9	47.5%	4.8	2.8%	0.5	0.3%	73.1	42.4%	172.4	339.2
2001	11.6	6.9%	77.3	46.1%	4.8	2.9%	0.4	0.2%	73.8	44.0%	167.8	340.0
2002	11.8	6.6%	86.5	48.3%	4.5	2.5%	0.4	0.2%	76.1	42.4%	179.2	344.7
2003	14.5	8.2%	88.0	50.0%	4.7	2.7%	0.4	0.2%	68.5	38.9%	176.1	325.2
2004	14.7	8.6%	82.6	48.4%	4.8	2.8%	0.4	0.2%	68.1	39.9%	170.5	319.0
2005	14.7	8.1%	87.5	47.9%	4.8	2.6%	0.7	0.4%	75.0	41.0%	182.7	342.6
2006	11.7	6.5%	87.4	48.4%	4.8	2.7%	1.0	0.5%	75.9	42.0%	180.7	336.1
2007 ^r	11.3	6.1%	90.3	48.7%	3.9	2.1%	1.5	0.8%	78.6	42.4%	185.6	361.0
2008 ^p	13.2	6.8%	98.5	50.8%	2.5	1.3%	1.7	0.9%	78.0	40.2%	193.9	368.3

^a Renewables includes solar, wood, biomass, wind, hydro and biogas.

^b Includes energy resources (and losses) attributable to electricity generation.

^p Preliminary estimates.

^r Revised due to revisions in contributing tables.

Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal, renewables and electricity use, by economic sector, and for Wisconsin electric utility energy use.

COMMERCIAL
END-USE
ENERGY
4.5%
IN 2008

In 2008, commercial sector end-use energy increased 4.5 percent. Since 1980, commercial end-use energy has increased 62.9 percent. Electricity energy use doubled over the same period.

The commercial sector saw a 0.8 percent decrease in electricity use, and increased in petroleum (16.8 percent) and natural gas (9 percent). Natural gas remains the major energy source, providing 50.8 percent of commercial sector energy, followed by electricity at 40.2 percent. Electricity use in this sector increased 298.3 percent since 1970. Petroleum's importance in this sector has declined from providing 28.3 percent of the energy used in 1970, to presently accounting for only 6.8 percent of total commercial energy consumption.

Wisconsin Industrial Energy Use, by Type of Fuel

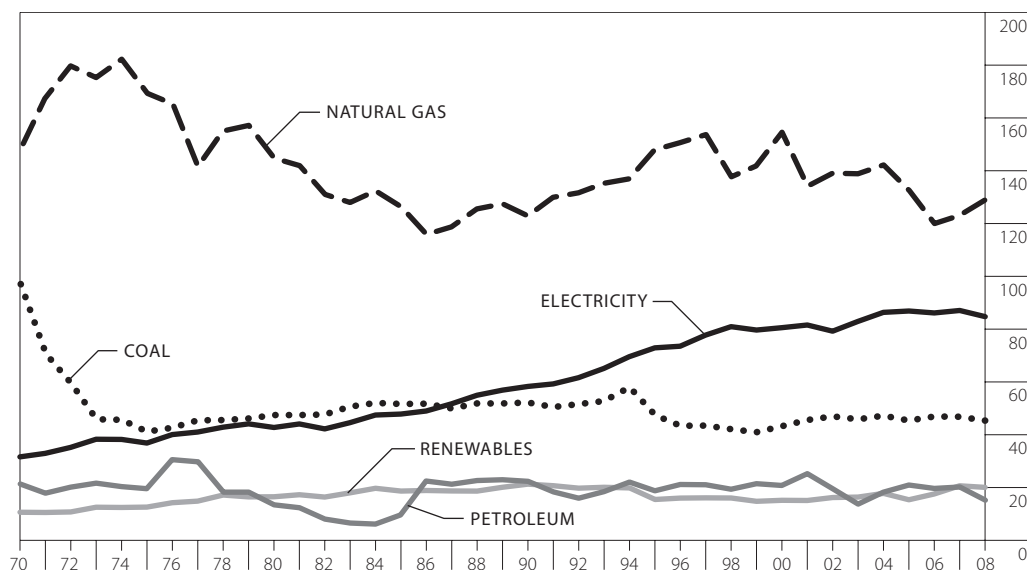
**INDUSTRIAL
END-USE
ENERGY
1.2%
IN 2008**

End-use energy consumption in the industrial sector decreased 1.2 percent in 2008, following an increase of 2.6 percent in 2007. The major industrial energy sources are natural gas (43.9 percent) and electricity (28.8 percent), trailed by coal (15.4 percent), renewables (6.8 percent) and petroleum (5.1 percent). While petroleum

continues to be the largest end-use energy source in Wisconsin, in the industrial sector petroleum comprises the smallest amount of energy use by fuel.

Use of all fuels in the industrial sector declined, with the exception of natural gas use which increased 4.7 percent. Coal decreased 3.1 percent; electricity 2.7 percent; renewables 2.9 percent; and petroleum 24.9 percent.

1970-2008 TRILLIONS OF BTU



1970-2008 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal		Renewables ^a		Electricity		Total End Use	Total Resource ^b
1970	21.1	6.9%	147.1	47.9%	97.1	31.6%	10.4	3.4%	31.4	10.2%	307.0	368.0
1975	19.3	6.9%	169.1	60.8%	40.9	14.7%	12.3	4.4%	36.6	13.2%	278.2	356.1
1980	13.2	5.0%	144.5	54.8%	47.2	17.9%	16.2	6.2%	42.5	16.1%	263.6	351.7
1985	9.4	3.7%	126.1	49.9%	51.4	20.3%	18.4	7.3%	47.6	18.8%	252.9	353.7
1990	22.1	8.0%	122.6	44.5%	51.9	18.8%	21.0	7.6%	58.0	21.1%	275.7	417.9
1995	18.5	6.1%	147.7	49.0%	47.2	15.7%	15.2	5.1%	72.7	24.1%	301.3	477.9
2000	20.5	6.6%	154.1	49.3%	43.0	13.7%	14.9	4.8%	80.3	25.7%	312.8	496.1
2001	25.0	8.3%	133.8	44.6%	45.3	15.1%	14.8	4.9%	81.3	27.1%	300.2	490.0
2002	19.3	6.4%	138.8	46.3%	46.7	15.6%	16.0	5.3%	79.0	26.3%	299.7	471.4
2003	13.4	4.5%	138.6	46.8%	45.6	15.4%	16.1	5.4%	82.7	27.9%	296.4	476.5
2004	18.0	5.8%	141.9	45.7%	47.0	15.1%	17.5	5.6%	86.1	27.7%	310.5	498.3
2005	20.7	6.9%	132.3	44.1%	45.1	15.0%	15.1	5.0%	86.6	28.9%	299.8	484.6
2006	19.4	6.7%	119.7	41.4%	46.7	16.1%	17.3	6.0%	85.9	29.7%	288.9	464.8
2007 ^r	20.0	6.7%	122.8	41.4%	46.6	15.7%	20.4	6.9%	86.8	29.3%	296.5	490.3
2008 ^p	15.0	5.1%	128.6	43.9%	45.1	15.4%	19.8	6.8%	84.5	28.8%	293.0	481.9

^a Renewables includes hydro, wood, biogas and biomass.

^b Includes energy resources (and losses) attributable to electricity generation.

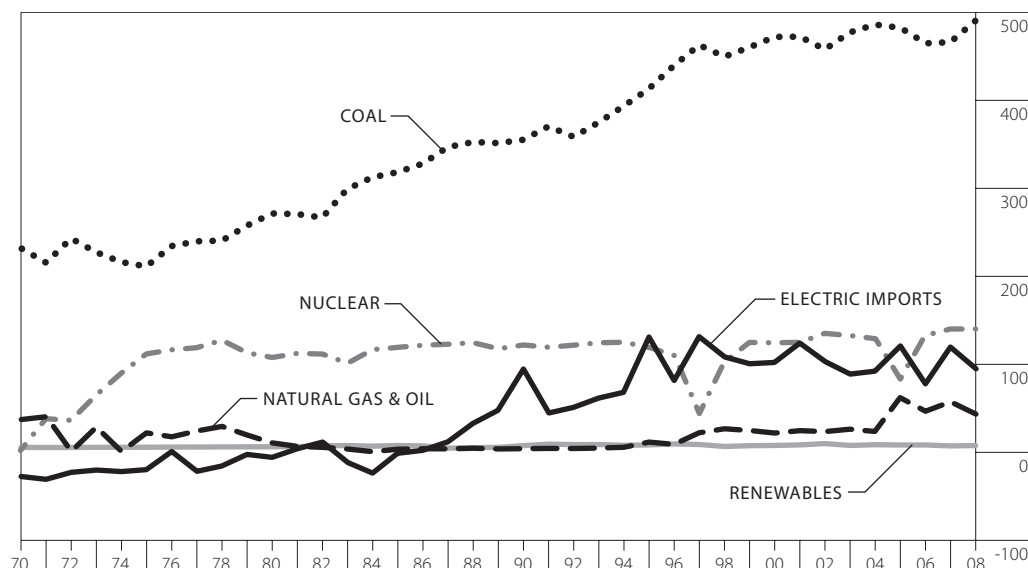
^p Preliminary estimates.

^r Revised due to revisions in contributing tables.

Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal, renewables and electricity use, by economic sector, and for Wisconsin electric utility energy use.

Wisconsin Energy Use for Electricity Generation, in Btu, by Type of Fuel

1970-2008 TRILLIONS OF BTU



1970-2008 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum	Natural Gas	Coal ^a	Renewables	Nuclear ^b	Electric Imports ^c	Hydro	Total
1970	7.9 3.2%	31.1 12.5%	231.1 93.0%	4.8 1.9%	1.7 0.7%	-28.2 -11.4%	4.8 1.9%	248.4
1975	7.8 2.3%	19.8 5.9%	210.5 63.0%	5.1 1.5%	111.2 33.3%	-20.4 -6.1%	5.1 1.5%	333.9
1980	4.8 1.2%	14.1 3.6%	270.7 68.4%	5.6 1.4%	107.0 27.0%	-6.5 -1.6%	5.6 1.4%	395.8
1985	1.4 0.3%	1.4 0.3%	317.7 71.5%	7.0 1.6%	118.6 26.7%	-1.8 -0.4%	7.0 1.6%	444.2
1990	1.0 0.2%	2.4 0.4%	354.5 61.2%	6.9 1.2%	121.2 20.9%	93.2 16.1%	4.4 0.8%	579.2
1995	0.8 0.1%	10.1 1.5%	412.4 60.7%	7.7 1.1%	118.5 17.5%	129.4 19.1%	5.2 0.8%	678.9
2000	1.6 0.2%	19.6 2.7%	471.4 65.0%	7.1 1.0%	123.8 17.1%	101.4 14.0%	5.0 0.7%	724.8
2005	1.8 0.2%	59.4 7.9%	481.7 64.1%	7.6 1.0%	81.8 10.9%	119.7 15.9%	6.6 0.9%	752.1
2006	1.4 0.2%	44.5 6.1%	464.1 63.9%	7.6 1.0%	132.1 18.2%	76.5 10.5%	6.2 0.9%	726.2
2007 ^r	1.7 0.2%	54.9 7.0%	465.4 59.2%	6.6 0.8%	139.4 17.7%	118.5 15.1%	4.6 0.6%	786.5
2008 ^p	1.1 0.1%	41.7 5.4%	489.7 63.3%	6.9 0.9%	139.4 18.0%	94.4 12.2%	4.7 0.6%	773.2

^a Includes petroleum coke.

^b Based on 10,800 Btu per kWh.

^c Estimated assuming 11,300 Btu of resource energy per kWh imported into Wisconsin. Numbers in parentheses and negative percentages indicate resource energy used in Wisconsin to produce electricity that was exported.

^p Preliminary estimates.

^r Revised.

Source: Public Service Commission of Wisconsin, Accounts and Finance Division, *Statistics of Wisconsin Public Utilities*, Bulletin #8 (1970-1994); U.S. Department of Agriculture, Rural Electrification Administration, *Annual Statistical Report*, REA Bulletin 1-1 (1970-1995); Wisconsin Department of Natural Resources, *Annual Survey of Point Source Emissions*, unpublished (1971-1995); American Gas Association, *Gas Facts* (1970-1995); U.S. Department of Energy, Energy Information Administration, *Electric Power Monthly*, [DOE/EIA-0226(05/06)] (May 2006); Public Service Commission of Wisconsin, unpublished data (2005-2008); telephone survey of wastewater treatment facilities and landfills on biogas production (2007-2008).

ENERGY USE
FOR ELECTRIC
GENERATION

1.7%
IN 2008

Wisconsin's energy use for electric generation decreased by 1.7 percent in 2008. Since the early 1980s, coal and nuclear power have been dominate fuels for electricity generation.

Coal use increased 5.2 percent and imports of electricity (and associated losses) from other states and Canada decreased 20.4 percent. Petroleum and natural gas use decreased by 38.2 and 24 percent respectively. In 2008, of the electricity produced in Wisconsin, coal provided 63.3 percent of the energy. The proportion of energy provided by petroleum, natural gas, renewables and hydropower was only 7 percent, and balance of electricity was nuclear or imports to the state.

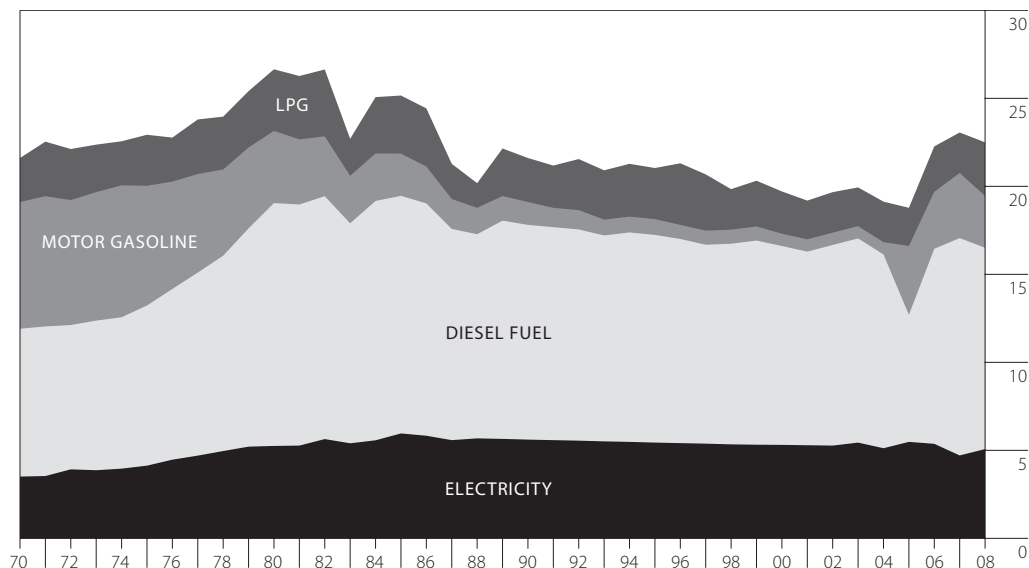
Wisconsin Agricultural Energy Use, in Btu, by Type of Fuel

AGRICULTURAL
END-USE
ENERGY
2.2%
IN 2008

Agricultural energy end-use decreased by 2.2 percent in 2008. Energy use in this sector is affected by changes in mechanization and automation, and by advances in technology such as biodiesel. Agricultural sector energy use accounted for 1.9 percent of total end-use energy in Wisconsin.

Starting in 2005, figures in this table reflect a shift from a per acre approach to gathering fuel data to new data resources for petroleum fuels. Previous to 2005, distillate and kerosene data were included in the diesel figure.

1970-2008 TRILLIONS OF BTU



1970-2008 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Motor Gasoline	Diesel Fuel ^a	LPG	Distillate and Kerosene	Total Petroleum	Electricity	Total End Use	Total Resource Use ^b
1970	7.2	8.4	2.5		18.1	3.5	21.6	28.4
1975	6.8	9.1	2.9		18.8	4.1	22.9	31.7
1980	4.1	13.8	3.5		21.4	5.3	26.7	37.5
1985	2.4	13.5	3.3		19.2	6.0	25.2	37.8
1990	1.3	12.2	2.5		16.0	5.6	21.6	35.4
1995	0.9	11.8	2.9		15.6	5.4	21.0	34.3
2000	0.7	11.3	2.4		14.4	5.3	19.7	31.8
2005	3.9	7.2	2.2	0.2	13.5	5.5	19.0	30.7
2006	3.2	11.1	2.6	0.3	17.2	5.4	22.6	33.5
2007 ^r	3.7	12.4	2.3	0.2	18.6	4.7	23.3	33.8
2008 ^p	3.0	11.4	3.0	0.3	17.7	5.1	22.8	34.1

^a Includes other light distillates, through 2005.

^b Includes energy resources (and losses) attributed to electricity generation.

^p Preliminary estimates.

^r Revised.

Source: Wisconsin Department of Administration, Division of Energy, based on U.S. Department of Agriculture, *Energy and U. S. Agriculture: 1974 Data Base* (September 1976), *1978 Census of Agriculture* (1980) and *Farm Production Expenditures* (1980-1984); Wisconsin Department of Agriculture, Trade, and Consumer Protection, *Wisconsin Agricultural Statistics* (1974-2006) and *Wisconsin Dairy Facts* (1982-2006); Wisconsin Department of Revenue fuels sales and tax data (2005-2008); National Agriculture Statistics Service, unpublished expenditure data (2005-2008); United States Department of Agriculture, Economic Research Service data, http://www.ers.usda.gov/data/FarmIncome/val_add/2000_08/Va0008WI.xls (2005-2008); Energy Information Administration, petroleum navigator, http://tonto.eia.doe.gov/dnav/pet/PET_CONS_821USEA_DCU_SWI_A.htm (2005-2008).

Wisconsin Agricultural Energy Use, in Gallons and kWh, by Type of Fuel

1970-2008 MILLIONS OF GALLONS AND MILLIONS OF kWh

Year	Motor Gasoline	Diesel ^a	LPG	Distillate and Kerosene	Total Petroleum	Electricity (Millions of kWh)
1970	58.0	60.7	26.2		144.9	1,028
1975	54.3	65.8	30.1		150.2	1,210
1980	33.0	99.3	36.9		169.2	1,539
1985	19.1	97.8	34.6		151.5	1,745
1990	10.1	88.5	25.9		124.5	1,645
1995	6.9	85.0	30.9		122.8	1,595
1996	6.3	84.0	36.8		127.1	1,835
1997	6.1	81.9	33.1		121.1	1,855
1998	6.0	82.2	24.2		112.4	1,875
1999	6.1	83.7	27.6		117.4	1,895
2000	5.8	81.4	25.3		112.5	1,555
2001	5.7	79.5	23.5		108.7	1,550
2002	5.8	82.1	24.0		111.9	1,545
2003	6.0	84.1	22.8		112.9	1,595
2004	5.8	81.2	24.1		111.1	1,501
2005	31.2	52.1	22.7	1.5	107.6	1,606
2006	25.9	80.0	27.1	2.0	135.0	1,574
2007	29.6	89.1	24.1	1.7	144.5	1,379
2008 ^p	23.6	82.5	31.8	2.1	140.0	1,486

Although farmers use manure digesters and other forms of energy generation such as biomass, and biodiesel to power and heat their farm, their primary energy comes from petroleum sources.

The Office of Energy Independence instituted a new method of data collection for fuels used in the agricultural sector. Starting in 2005, agricultural sector data have been revised to reflect the new data collection method. Previous to 2005, kerosene and distillates were included in the diesel figure.

^a Fuel oil and kerosene, through 2004.

^p Preliminary estimates.

Source: Wisconsin Department of Administration, Division of Energy, based on U.S. Department of Agriculture, *Energy and U. S. Agriculture: 1974 Data Base* (September 1976), *1978 Census of Agriculture* (1980) and *Farm Production Expenditures* (1980-1984); Wisconsin Department of Agriculture, Trade, and Consumer Protection, *Wisconsin Agricultural Statistics* (1974-2005) and *Wisconsin Dairy Facts* (1982-2005); and Wisconsin Department of Revenue, *Motor Vehicle Fuel Tax Statistics* (1991-2008); National Agriculture Statistics Service, unpublished expenditure data (2005-2008); United States Department of Agriculture, Economic Research Service data, http://www.ers.usda.gov/data/FarmIncome/val_add/2000_08/Va0008WI.xls (2005-2008); Energy Information Administration, petroleum navigator, http://tonto.eia.doe.gov/dnav/pet/PET_CONS_821USEA_DCU_SWI_A.htm (2005-2008).

Wisconsin Transportation Energy Use, in Btu, by Type of Fuel

TRANSPORTATION
ENERGY USE**2.4%**MOTOR
GASOLINE USE**5.3%**

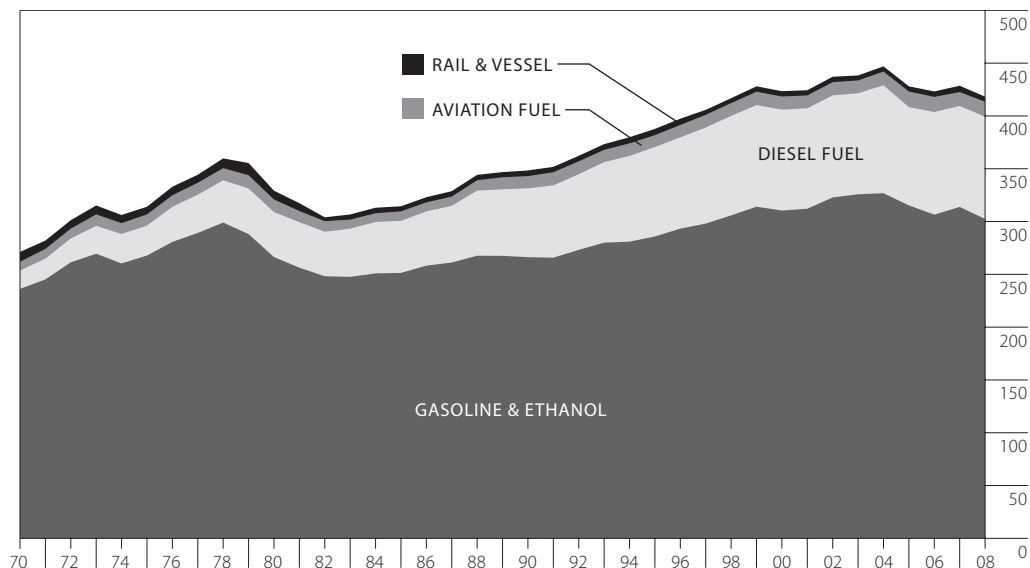
ETHANOL USE

34.5%

Transportation energy use decreased 2.4 percent in 2008. Motor gasoline use decreased 5.3 percent, while ethanol use increased 34.5 percent.

Diesel fuel is used primarily for trucking freight. Diesel fuel use increased 1.3 percent. Transportation activities consume 34.6 percent of Wisconsin's total end-use energy, accounting for 83.1 percent of petroleum use.

1970-2008 TRILLIONS OF BTU



Year	Motor Gasoline ^a	Ethanol	Diesel Fuel	Aviation		Rail Distillate & Residual	LPG	Total ^b
				Gasoline	Jet Fuel			
1970	236.2		17.3	0.7	7.7	9.3	NA	271.2
1975	267.8		28.4	0.8	9.8	7.2	NA	314.0
1980	266.4		42.6	0.9	11.0	8.3	NA	329.2
1985	251.2	0.1	49.3	0.6	8.4	4.8	NA	314.4
1990	265.6	0.7	65.2	0.6	11.0	5.3	NA	348.4
1995	281.7	4.1	84.7	0.7	10.6	5.9	0.6	388.3
2000	302.5	7.9	95.6	0.8	11.7	5.0	0.5	423.9
2001	304.9	7.3	95.1	0.7	11.5	4.9	0.4	424.8
2002	315.4	7.4	96.7	0.6	11.9	5.1	0.4	437.5
2003	317.3	8.5	95.7	0.5	11.6	4.7	0.4	438.7
2004	318.2	8.7	102.2	0.5	12.5	4.9	0.4	447.4
2005	304.9	10.4	93.1	0.5	14.3	4.9	0.3	428.3
2006	295.5	11.0	97.2	0.4	13.9	5.2	0.3	423.5
2007	300.2	13.6	95.6	0.4	12.8	6.0	0.2	428.8
2008 ^p	284.2	18.3	96.8	0.3	13.82	4.8	0.2	418.5

^a Excludes ethanol.^b Since 1994, fewer than .05 trillion Btu of compressed natural gas (CNG) were used for highway transportation.^p Preliminary estimate.

NA – Not available.

Source: Wisconsin Department of Commerce, Bureau of Petroleum Inspection, *Report on Petroleum Products Inspected and Delivered to Wisconsin* (1970-1995); Wisconsin Department of Revenue, *Motor Vehicle Fuel Tax Statistics* (1970-2008) and *Petroleum Supply Annual*, DOE/EIA-3340 (1982-2008); U.S. Department of Energy, Form EIA-782C, "Monthly Report of Petroleum Products Sold for Consumption" (1983-2008); WI Office of Energy Independence surveys of airport fixed base operators and railways (2007-2008).

Wisconsin Transportation Energy Use, in Gallons, by Type of Fuel

1970-2008 MILLIONS OF GALLONS

Year	Motor Gasoline ^a	Ethanol	Diesel Fuel	Aviation		Distillate & Residual		LPG	Total ^b
				Gasoline	Jet Fuel	Rail	Vessel		
1970	1,889.1		124.8	5.9	56.7	49.2	17.0	NA	2,142.7
1975	2,142.8		205.1	6.7	72.4	36.6	14.1	NA	2,477.7
1980	2,130.7		307.1	7.0	81.4	44.8	14.8	NA	2,585.8
1985	2,009.7	1.5	356.9	4.5	62.2	27.1	7.4	NA	2,469.3
1990	2,124.4	8.3	471.1	5.0	81.6	28.6	9.0	NA	2,728.0
1995	2,254.1	48.5	612.5	5.6	78.6	35.1	6.9	6.1	3,047.4
1996	2,307.8	56.8	624.6	5.7	82.0	38.4	3.7	6.0	3,125.0
1997	2,345.5	57.5	657.6	5.8	84.0	34.1	0.0	5.8	3,190.3
1998	2,398.4	71.5	681.0	5.9	85.0	31.9	0.5	5.7	3,279.9
1999	2,461.5	75.4	696.3	6.1	87.4	37.0	0.0	5.1	3,368.8
2000	2,513.2	93.8	691.2	6.0	87.0	35.9	0.0	5.3	3,432.5
2001	2,524.5	85.9	687.7	5.9	85.0	35.2	0.0	4.6	3,428.9
2002	2,611.3	88.2	698.9	4.9	88.2	36.9	0.0	4.0	3,532.3
2003	2,639.6	100.9	692.1	4.3	86.1	33.7	0.0	3.8	3,560.5
2004	2,648.1	102.5	738.5	4.2	92.5	35.7	0.0	3.7	3,625.2
2005	2,439.2	123.0	672.7	4.1	105.7	35.1	0.0	3.0	3,382.8
2006	2,364.1	130.4	702.6	3.5	102.9	37.2	0.0	3.2	3,343.9
2007 ^r	2,401.7	161.2	691.3	2.8	94.6	43.2	0.0	2.3	3,397.2
2008 ^p	2,273.3	217.0	700.0	2.6	102.4	34.7	0.0	2.5	3,332.6

^a Excludes ethanol. See adjacent column for amounts ethanol which is blended with gasoline.

^b In 2008, 155.8 thousand gasoline gallon equivalents of compressed natural gas were used for highway transportation.

NA – Not available.

^p Preliminary estimate.

^r Revised.

Source: Wisconsin Department of Commerce, Bureau of Petroleum Inspection, Report on Petroleum Products Inspected and Delivered to Wisconsin (1970-1995); Wisconsin Department of Revenue, Motor Vehicle Fuel Tax Statistics (1970-2008) and Petroleum Supply Annual, DOE/EIA-3340 (1982-2008); U.S. Department of Energy, Form EIA-782C, "Monthly Report of Petroleum Products Sold Into States for Consumption" (1983-2008); WI Office of Energy Independence surveys of airport fixed base operators and railways.

AVERAGE
PRICE OF
GASOLINE
\$.422
PER GALLON

In 2008, the average statewide price of gasoline increased by \$.422 a gallon, to \$3.289 a gallon. High gasoline prices in 2008 contributed to the decrease in gasoline consumption, while concurrently influencing an increased ethanol blend rate and ethanol consumption.

Ethanol, a renewable energy resource primarily distilled from corn, is used as an oxygenate in reformulated gasoline and in the blending of E10 (10 percent ethanol, 90 percent gasoline) and E85 (85 percent ethanol, 15 percent gasoline).

The increased use of ethanol is also linked to the increased availability of ethanol statewide—from August 2008 to August 2009, the number of E85 stations increased from 111 to 125.